**CLAIMS**

1. A method for lossy compression of digitized images, comprising the steps of,

(a) wavelet transformation of the image, with smoothing and extending to reduce high frequency contents, said step including steps of

(i) determining a linear interpolation consisting of a line, joining the first and last pixels in each row and in each column of the image,

(ii) determining how many factors of two are present in each dimension of the image,

(iii) extending these dimensions until each has at has at least four factors of two present,

(iv) allocating the memory needed to extend the image to the new dimensions, resulting in a memory buffer containing the image data augmented by a *padding* of uninitialized memory cells to the right and bottom of cells containing the image data,

(v) joining the first and last pixels of each row and column by writing the linear interpolation function generated into the image extension padding supplied by step (iv), and

(vi) performing a discrete wavelet transform on the extended image generated by steps (i) through (v), producing a quad-tree data structure which contains the wavelet transform of the image;

(b) quantization by conversion of the floating point coefficients, output by step (a)(i), into a fixed alphabet (Spec 3.2) of L-bit integers with a separate and fixed, quantization function for each band of coefficients within the wavelet transform output by (a)(vi), wherein the

separate quantization functions have been determined to be nearly optimal in rate vs. distortion for subsequent compression of most

(c) Run length encoding (RLE) by the following steps,

(i) Three run Length Encoders are assigned to vertically traverse the tree, with each being assigned to certain, vertically contiguous bands of the tree, according to step (c)(i),

(ii) The subbands contained in each band are horizontally or vertically scanned according to the type of wavelet filter (Spec3.11) producing each said subband, and

(iii) Mapping by RLE of quantized coefficients by a symbol table (Spec 3.31) to three sets of new coefficients, each drawn from statistically similar regions of the quad-tree, representing the data dn zero run lengths, whereby resulting output effects improved subsequent entropy compression;

(d) Huffman entropy coding of the image data output by step (c) into three sets of coded data by

(i) Building a separate probability density function (PDF) for each of the three data sets,

(ii) Constructing a separate Huffman codebook for PDF

(iii) Mapping the data to variable length code words using the codebooks built in step b. resulting in improved compression due to the similar distributions of the data sets within each of the three data sets; and

(e) Mapping and compaction of the codebooks generated by (d)(iii) to new codebooks wherein,

(i) The codebooks generated by (d)(iii) are mapped into new codebooks which can be implicitly stored by a sequence of codeword lengths (Spec 3.43), and

(ii) These lengths are stored with words whose bit

length = $\log_2$ (Largest word length) resulting in substantial savings of storage space when compared to explicit storage of the original codebooks, thus further enhancing the benefits gained by using multiple codebooks.

2. A method for performing image compression as stated in claim 1, wherein linear interpolation is used in step to minimize high frequency artifacts at image boundaries.

3. A method of quantization as stated in claim 1, further comprising a fixed profile of the wavelet bands in conjunction with alphabet constraint to achieve a nearly optimal rate/distortion with minimal computation effort.

4. A method of RLE coding as stated in claim 1, further comprising RLE within each band, to better take advantage of each band's significance.

5. A method of RLE coding as stated in claim 4, further comprising the, per image, development of several independent RLE coders to take advantage of the statistics within the wavelet coefficient bands.

6. A method of entropy coding, as stated in claim 1, further comprising the per-image development of several Huffman generated codebooks which are used to advantageously exploit the statistical characteristics of the wavelet bands.

7. A method of entropy coding, as stated in claim 6, further comprising the use of mapping Huffman codes to significantly reduce codebook size.